

NATIONAL 4 CHEMISTRY

SUMMARY NOTES

Unit One: Chemical Changes and Structure

3. Atomic Structure & The Periodic Table

The atom is made up of 3 sub-atomic particles:

Particle	Charge	Mass (amu)	Where found
Proton	+1	1	Nucleus
Neutron	0	1	Nucleus
Electron	-1	0 (almost)	Orbits outside nucleus

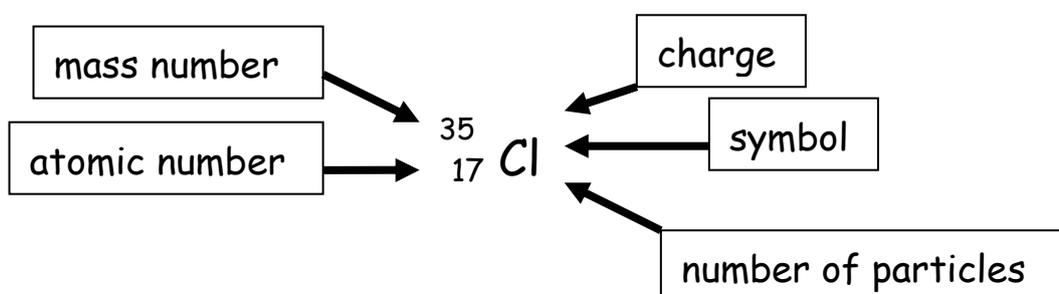
Elements are listed in the Periodic Table in order of their Atomic Number.

Atomic number = number of **protons**.

Mass number = number of **protons** + number of **neutrons**.

Number of **electrons** = number of **protons** - charge.

Atoms are neutral because the number of **protons** equals the number of **electrons**.



Electron Arrangement

The electrons occupy energy levels, or electron shells. These shells don't all take the same number of electrons.

Shell	No. of electrons
1	2
2	8
3	8

These shells are filled until all the electrons are placed, giving the electron arrangement of the atom.

Eg, Sodium has **11** electrons so has an electron arrangement of **2,8,1**.

Elements in the same **group** of the Periodic Table have the same number of electrons in their outer electron shell. They also have **similar chemical properties**.

In the **Periodic Table**, the **rows** are known as **periods** while the **columns** are known as **groups**.

All elements are found in the Periodic Table in periods (rows) and groups (columns).

All elements have a chemical symbol which has ONE capital letter and a small letter if a 2nd is needed.

Elements in the same group have similar chemical properties. The number of electrons gives the group number so elements with the same number of outer electrons have similar chemical properties.

Group 1 - **alkali metals** - very reactive (lithium, sodium, etc.)

Group 7 - **halogens** - very reactive (fluorine, chlorine, etc.)

Group 8 or 0 - **Noble gases** - completely unreactive (helium, argon, etc.)